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To: U.S. Department of Commerce
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M#

Client Ref

273686

FOO-219-US-DIV-3

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Applicant: MANABE et al.

Div. of Appln. No.: 09/417,778

Filing Date: October 14, 1999

Examiner: Minh Loan Tran Group Art Unit: 2811

Date: OCTOBER 2, 2000

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Examiner's Initials*	Document Number	Date MM/YYYY	Name (Family Name of First Inventor)	Class	Sub Class	Filing Date (if appropriate)
	AR 5,278,433	1/1994	Manabe et al.			
	BR 4,844,989	07/89	Murdock			
	CR 4,408,217	10/83	Kobayashi			
	DR 4,268,842	05/81	Jacob et al.			
	ER 5,005,057	04/91	Izumiya et al.			
	FR 4,614,961	09/86	Khan et al.			
	GR 4,153,905	05/79	Charmakedze et al.			
	HR 4,855,249	08/89	Akasaki et al.			
	IR 4,911,102	03/90	Manabe et al.			
	JR 4,945,548	08/90	Kotaki et al.			
	KR 4,396,929	08/83	Ohki et al.			
	LR 5,006,908	04/91	Natsuoka et al.			
	MR 4,608,581	08/86	Bagratishvili et al.			
	NR 4,473,938	10/84	Kobayashi et al.			

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							Enclosed	No	Enclose	No
	OR 2-229475	09/1990	Japan					x		x
	PR 2-275682	11/1990	Japan					x		x
	QR 5-042785	04/1975	Japan					x		x
	RR 59-228776	12/1994	Japan					x		x
	SR 0 620 203 A1	10/1994	Europe	Nakahata				x		x
	TR 0-277597	08/1988	EPA					x		x
	UR 03-034549	02/1991	Japan	Toyoda				x		x
	VR 34549	02/1991	Japan	Hatano				x		x
	WR 4,006,449	09/1990	Germany	Manabe				x		x
	XR 57-018377	01/1982	Japan	KOBAYASHI				x		x

OTHER (Including in this order: Author, Title, Periodical Name, Date, Relevant Pages, etc.)

YR	English Abstract of OKI Japanese Application Published 9/22/82 under No. 57-153479.									
ZR	I. Akasaki et al., "Effects of AlN Buffer Layer on Crystallographic Structure... by MOVPE", J. Crystal Growth 98 (1989) pp. 209-19.									
AAR	Liu et al., "Growth morphology and surface-acoustic-wave measurements of AlN films on Sapphire," Journal of Applied Physics, Vol. 46, No. 9, September 1975, pages 3703-3706.									
BBR	Ilegems et al., "Electrical properties of n-Type Vapor-growth Gallium Nitride", J. Phys. Chem. solids., 1973, V. 1. 34, pp. 885-895.									

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	ER 5,076,860	12/1991	Ohba et al.			
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							Enclosed	No	Enclose	No
	MR 58-012381	01/1983	Japan	Yoneda				X		X
	NR 61-007671	01/1986	Japan	Kawabata				X		X
	OR 57-087184	05/1982	Japan	Tabuchi				X		X
	PR 57-153479	09/1982	Japan	Ooki				X		X
	QR 2-738329	03/1978	Germany	Jacob et al.				X		X
	RR 56-59699	05/1981	Japan	Ooki				X		X
	SR 34549	02/1991	Japan	Hatano				X		X
	TR 3-046018	09/1981	Germany	Kobayashi et al.				X		X

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UR	Koide et al. "Effect of an AlN Buffer layer on AlGaNa-A1203 Heteroepitaxial Growth by MOVPE", Japanese Journal of Crystal Growth 1986, Vol. 13, No. 4, pp. 218-225.			
VR	Sayyah et al. "The Influence of TMA and SiH4 on the Incorporation Rate of GaNAlxGa1-xN Crystals Grown from TMG and NH3", Journal of Crystal Growth 77 (1986), pp. 424-429 North-Holland, Amsterdam.			
WR	Bottko, et al., Silicon and beryllium doping of OMVPE Grown..., Journal of Crystal Growth 68 (1984) pp. 54-59, North-Holland Amsterdam			
XR	Madar et al., "Growth Anisotropy in the CaN/Al2O3 System," Journal of Crystal Growth 40, 1997, pages 239-252.			
YR	Koide et al., "Epitaxial Growth and Properties of AlxGa1-xN by MOVPE, Reprinted from Journal of the Electrochemical Society, Vol. 133, No. 9, September 1986, pp. 1956-1960			
ZR	Boulou et al., "Light emitting Diodes Based on GaN", Philips Tech. Rev., 37, 237-240 No. 9/10, 1977.			

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Group Art Unit: 2811

Date: October 2, 2000

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							Enclosed	No	Enclose	No
	MR 49-29771	7/1972	Japan	Kasano				x		x
	NR 2623466	2/1990	Japan	Sassa et al.				x		x
	OR 59-228776	6/1983	Japan	Maefutsu et al.				x		x
	PR 60-173829	2/1984	Japan	Maefutsu et al.				x		x
	QR 1-589351	05/1981	England							
	RR 63-188977	08/1988	Japan							
	SR 62-119196	05/1987	Japan							
	TR 57-046669	10/1982	Japan							
	UR 03-034549	02/1991	Japan							
	VR 54-071589	06/1979	Japan	Toyoda						

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WR	English Abstract of OOKI Japanese Application Published 9/19/82 under No. 57-153479.			
XR	I. Akusuki et al., "Effects of AlN Buffer Layer on Crystallographic Structure... by MOVPE", J. Crystal Growth 98 (1989) pp. 209-19.			
YR	Sayyah, A Study of Growth Mechanisms and Electrical and Optical Properties of Epitaxial Al _x Ga _{1-x} N Layers Grown by Atmospheric Pressure Metalorganic Chemical Vapor Deposition, A Dissertation presented to Faculty of the Graduate School, University of Southern California, February 1986, pp. 125-136.			
ZR	K ide et al., Epitaxial Growth and Properties of Al _x Ga _{1-x} N by MOVPE, J. Electrochem. Soc.: SOLID-STATE SCIENCE AND TECHNOLOGY, Vol. 133, No. 9, September 1986, pp. 1956-1960.			

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	MR 58-046686	03/1983	Japan	Yoneda				x		x
	NR 54-071590	06/1979	Japan	Toyoda				x		x
	OR 02-081482	03/1990	Japan	Manabe				x		x
	PR 02-081483	03/1990	Japan	Manabe				x		x
	QR 02-081484	03/1990	Japan	Manabe				x		x
	RR									

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SR	Masakiyo Matsumura, Semiconductor Devices, Chapter 2, Principle of Diodes, 2.1: pn junction and rectification, December 25, 1986, p. 13.					
TR	Kiyoshi Takahashi, Semiconductor Engineering: Basic Characteristics of Semiconductor, Morikita Electric Engineering Series, Vol. 4, Chapter 14: Semiconductor Material Technics, 14.1: Forming of Semiconductor Material, August 1, 1975, p. 297.					
UR	Hiroyuki Matsunami, Semiconductor Engineering, Chapter 2: Basic Characteristics of Semiconductor, March 25, 1983, pp. 18-31.					
VR	Sano et al., Properties of III-V Nitride Semiconductors, Japanese Journal of Applied Physics, Vol. 52, No. 5, 1983, pp. 374-387.					
WR	Miyoshi Haradome, Basics of Semiconductor Engineering, Chapter 8: Compound Semiconductor, 8.1, Conditions to be Semiconductor, August 30, 1967, p. 161.					
XR	A.S. Grove, Physics and Technology of Semiconductor, Chapter 4: Basics of Semiconductor Physics, 1967, translated and published in Japan June 23, 1995, pp. 112-123.					

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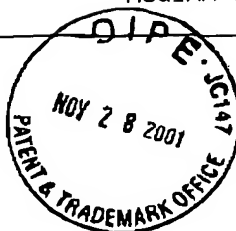
UR	Kazuyo Kadota, The Invention, 39 New Technics Selected by Japan Patent Office; Laser Technics, Vol. 94, No. 9 (the first volume); September 1997, pp. 42-49.
VR	Pankove et al., Optical Absorption of GaN, Applied Physics Letters, Vol. 17, No. 5, September 1970, pp. 197-198.
WR	Amano et al., Effects of the Buffer Layer In Metalorganic Vapour Phase Epitaxy of GaN on Sapphire Substrate, Thin Solid Films, 163, (1988), pp. 415-420.
XR	Akasaki et al., Effects of AlN Buffer Layer on Crystallographic Structure and on Electrical and Optical Properties of GaN and Ga _{1-x} Al _x N (0 < x < 0.4) Films Grown on Sapphire Substrate by MOVPE, Journal of Crystal Growth 98 (1989), pp. 209-219.
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AAR	Hiramatsu et al. "Effects of Buffer Layer in MOVPE Growth of GaN Film on Sapphire Substrate" Japanese Journal of Crystal Growth, 1998, Vol. 15, No. 3&4, pp. 334-342
BBR	Elwell et al. "Crystal Growth of Gallium Nitride" Prog. Crystal Growth and Charact. 1988, vol. 17, pp. 53-78.
CCR	
DDR	
EER	

Examiner

Date Considered:

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F00-219-C

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Applicant: MANABU TECHNOLOGY CENTER 2800

Appl. No.: 09/677,781

Filing Date: October 2, 2000

Date: November 28, 2001

Page 1 of 1

Examiner: S. Mulpuri

Group Art Unit: 2812

U.S. PATENT DOCUMENTS

Examiner's Initials*	Document Number	Date MM/YYYY	Name (Family Name of First Inventor)	Class	Sub Class	Filing Date (if appl)
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FOREIGN PATENT DOCUMENTS

	Document Number	Date MM/YYYY	Country	Inventor Name	English Abstract	Trans- lated Abstract
					Enclosed	No
GR	KR 59-228776	12/1984	Japan	Maefutsu et al.		X
GR	LR 56-080183	07/1981	Japan	Kobayashi et al.	X	
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	OR					
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GR	SR	Amano, The Research on MOVPE Growth and Application to Photoelectric Physical Property of GaN and a Device Emitting Blue-Color Lights, Doctoral Dissertation of Nagoya University, Chapter 7.8 (pages 80-94), January 13, 1989	X	Partial
	TR	Jacob et al., Efficient Injection Mechanism for Electroluminescence in GaN, Applied Physics Letter, Vol. 30, No. 8, pp. 412-414, April 15, 1977		
	UR	Tietjen et al., Vapor Phase Growth Technique and System for Several III-V Compound Semiconductors, RCA Laboratories, 5 pages, March 1969	X	Partial
	VR	Ta, Photoluminescence Characterization of Shallow Impurities in GaN Grown by Chemical Vapor Deposition, Dissertation for University of Southern California, pages 1-166, July 1981		
	WR	Wang, Photoluminescence and Stimulated Emission from GaN, Dissertation for University of Southern California, pages 1-158, November 1978		
GR	XR	Sayyah, A Study of Growth Mechanisms and Electrical and Optical Properties of Epitaxial Al _x Ga _{1-x} N layers Grown by Atmospheric Pressure Metalorganic Chemical Vapor Deposition, Dissertation for University of Southern California, pp. 1-176, February 1986		

Examiner

Date Considered: 2/8/02

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273686		FOO-21903S-DIV-3
Applicant: MANABE et al.		
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Examiner: S. MULPURI		Group Art Unit: 2812

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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FOREIGN PATENT DOCUMENTS

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	HR	63-188938	08/1988	Japan			X			
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RR	SZE, S., "Physics of Semiconductor Devices," <i>Wiley-Interscience</i> , 1969, pp. 42-43.				
SR	TIETJEN, J., "Vapor Phase Growth Technique and System for Several III-V Compound Semiconductors," <i>RCA Laboratories</i> , 1969, pp. 1-9.				
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